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The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1	1. (withdrawn) A method for making prioritized recommendations to a
2	customer in the process of filling a market basket for purchase on an Internet
3	commerce site, the method comprising the steps of:
4	generating a matrix of training data;
5	considering preferences based on associative and renewal buying
6	history from the training data; and
7	making a prioritized recommendation of items so as to maximize the
8	likelihood that the customer will add to the market basket those items with
9	higher priorities.
1	2. (withdrawn) The method of claim 1, wherein the two preferences are
2	estimated separately from the training data and combined in proper
3	proportions to obtain an overall preference for item not yet in the market
4	basket.
1	3. (original) A method for making prioritized recommendations to a
2	customer in the process of filling a market basket for purchase on an Internet
3	commerce site, the method comprising the steps of:
4	collecting statistics from training data;
5	precomputing model parameters from the collected statistics; and
6	recommending ordering for a given partial market basket based on the
7	precomputed model parameters.
1	4. (original) The method of claim 3, wherein the step of collecting statistics
2	comprises the steps of



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- 3 (a) for each item j, obtaining n_i a number of baskets with item j purchased;
- 4 (b) for each item j, obtaining n_j a number of baskets with j being a sole item purchased;
- (c) for each pair of items i and j, obtaining a number of market baskets n_{ji}
 with items j and i purchased together; and
 - (d) for each pair of items i and j, obtaining a number of market baskets n_{ii} with items i and j being the only two items purchased.



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- 5. (original) The method of claim 4, wherein the step of precomputing model parameters comprises the steps of:
- 3 (a) computing $\mathbf{P}(\text{renewal}) = \frac{\sum_{k} n_{k}'}{\sum_{k} n_{k}};$
- 4 (b) for each item j, computing $P(j) = \frac{n_j}{\sum_k n_k}$;
- 5. (c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \frac{n_j'}{n_j} + \mathbf{P}(\text{renewal}) \left(1 \frac{n_j'}{n_j}\right)$
- 6 ;
- 7 (d) for each item j, computing
- 8 $\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \frac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})};$
- 9 (e) for each pair of items i and j with $n_{ij} \neq 0$, computing
- 10 $\mathbf{P}(j \mid i) = \frac{n_{ji}}{\sum_{k} n_{ki}};$

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(f) for each pair of items i and j with $n_{ij} \neq 0$, computing

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$$\mathbf{P}(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + \mathbf{P}(\text{renewal}) \left(1 - \frac{n_{ji}'}{n_{ji}}\right) ; \text{ and }$$

13 (g) for each pair of items i and j with $n_{ij} \neq 0$, computing

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$$\mathbf{P}'(j \mid \mathrm{asso},i) = \mathbf{P}(j \mid i) \times \frac{(1-\mathbf{P}(\mathrm{renewal} \mid j,i))}{(1-\mathbf{P}(\mathrm{renewal} \mid i))}.$$



- 6. (original) The method of claim 5, wherein given a partial basket $\mathbf{B} = \{i_1, i_2, \dots, i_m\}$
- 2 ..., i_k and $\overline{\mathbf{B}}$ is a complementary set of items not in \mathbf{B} , the step of
- recommending ordering for a given partial market basket comprises the steps
- 4 of:
 - (a) if **B** is empty, sorting items in order of decreasing $P(j \mid \text{renewal})$ and returning this as an item preference ordering;
- 7 (b) if **B** is non-empty, then
- 8 (i) computing $\mathbf{P}(\text{renewal} \mid \mathbf{B}) = \min_{i, \in \mathbf{B}} \mathbf{P}(\text{renewal} \mid i_k)$;
- 9 (ii) compute a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})$;
- 10 (iii) for each item $j \in \overline{\mathbf{B}}$, computing

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$$\mathbf{P}(j \mid \text{renewal}) = \frac{\mathbf{P}'(j \mid \text{renewal})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})};$$

- (iv) computing a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(j \mid \text{asso,} \mathbf{B})$;
- (v) for each item $j \in \overline{\mathbf{B}}$, computing
- 14 $\mathbf{P}'(j \mid \mathsf{asso}, \mathbf{B}) = \mathsf{max}_{i_k \in \mathbf{B}} \mathbf{P}(j \mid \mathsf{asso}, i_k) ;$

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15 for each item $j \in \overline{\mathbf{B}}$, computing (vi) $P(j \mid asso,B) = \frac{P'(j \mid asso,B)}{\sum_{k=1}^{\infty} P'(k \mid asso,B)};$ 16 for each item $j \in \overline{\mathbf{B}}$, computing 17 (vii) P(j|B) = P(j | asso,B)P(asso | B)+P(j | renewal,B)P(renewal | B);18 19 and 20 (viii) sorting items in order of decreasing $P(j \mid B)$ and returning this 21 as an item preference ordering. 1 7. (original) The method of claim 6, wherein the step of sorting comprises 2 the step of using a final probability obtained for each item, P(i | B), of a 3 customer buying the item to maximize profit by recommendation. 1 8. (original) The method of claim 7, wherein the step of using a final 2 probability of an item to maximize profit comprises the steps of: 3 assigning a profit amount, \$, to each item; 4 computing P(j | B)\$, for each item; and 5 ranking recommendations based on the computation of $P(j \mid B)$, for 6 each item.



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9. (new) A method for making prioritized recommendations to a customer in the process of filling a market basket for purchase on an Internet commerce site, the method comprising the steps of:

collecting statistics on preferences for associative and renewal buying from training data;

precomputing model parameters from the collected statistics; and recommending ordering for a given partial market basket based on the precomputed model parameters.

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- 1 10. (new) The method of claim 9, wherein the step of collecting statistics comprises the steps of:
- 3 (a) for each item j, obtaining n_j a number of baskets with item j purchased;
- 4 (b) for each item j, obtaining n_j a number of baskets with j being a sole item purchased;
 - (c) for each pair of items i and j, obtaining a number of market baskets n_{ji} with items j and i purchased together; and
 - (d) for each pair of items i and j, obtaining a number of market baskets n_{ji} with items i and j being the only two items purchased.



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11. (new) The method of claim 10, wherein the step of precomputing model parameters comprises the steps of:

(a) computing P(renewal) =
$$\frac{\sum_{k} n_{k}'}{\sum_{k} n_{k}};$$

- 4 (b) for each item j, computing $P(j) = \frac{n_j}{\sum_k n_k}$;
- 5 (c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \frac{n_j'}{n_j} + \mathbf{P}(\text{renewal}) \left(1 \frac{n_j'}{n_j}\right)$

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7 (d) for each item *j*, computing

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$$\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \frac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})};$$

9 (e) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}(j \mid i) = \frac{n_{ji}}{\sum_{k} n_{ki}};$$

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for each pair of items i and j with $n_{ij} \neq 0$, computing

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$$\mathbf{P}(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + \mathbf{P}(\text{renewal}) \left(1 - \frac{n_{ji}'}{n_{ji}}\right) ; \text{ and }$$

for each pair of items i and j with $n_{ij} \neq 0$, computing 13

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$$\mathbf{P}'(j \mid \mathrm{asso},i) = \mathbf{P}(j \mid i) \times \frac{(1 - \mathbf{P}(\mathrm{renewal} \mid j,i))}{(1 - \mathbf{P}(\mathrm{renewal} \mid i))}.$$



12. (new) The method of claim 11, wherein given a partial basket $\mathbf{B} = \{i_1, i_2, ...\}$

..., i_k and $\overline{\mathbf{B}}$ is a complementary set of items not in \mathbf{B} , the step of 2

3 recommending ordering for a given partial market basket comprises the steps

4 of:

> if **B** is empty, sorting items in order of decreasing P(i | renewal) and returning this as an item preference ordering;

(b) if **B** is non-empty, then

computing $P(\text{renewal} \mid \mathbf{B}) = \min_{i_k \in \mathbf{B}} P(\text{renewal} \mid i_k)$; (i)

compute a normalization factor $\sum_{k \in \overline{\mathbf{R}}} \mathbf{P}'(k \mid \text{renewal})$; (ii)

for each item $j \in \overline{\mathbf{B}}$, computing 10 (iii)

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$$\mathbf{P}(j \mid \text{renewal}) = \frac{\mathbf{P}'(j \mid \text{renewal})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})};$$

computing a normalization factor $\sum_{j \in \overline{R}} P'(j \mid asso, B)$; 12 (iv)

for each item $i \in \overline{\mathbf{B}}$, computing 13 (v)

 $\mathbf{P}'(j \mid \text{asso,} \mathbf{B}) = \max_{i_k \in \mathbf{B}} \mathbf{P}(j \mid \text{asso,} i_k) ;$ 14